

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date
29 December 2005 (29.12.2005)

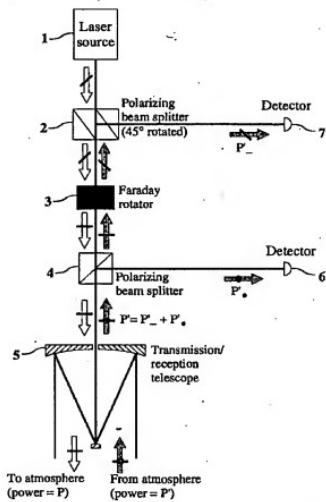
PCT

(10) International Publication Number
WO 2005/124393 A1

- (51) International Patent Classification?: G01S 17/95. (72) Inventor; and
7/481 (75) Inventor/Applicant (for US only): CESARE, Stefano
[IT/IT]; Via Sostegno, 94, I-10146 Torino (IT).
- (21) International Application Number: PCT/IT2004/000637 (81) Designated States (unless otherwise indicated, for every kind of national protection available): AL, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EB, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (22) International Filing Date: 18 November 2004 (18.11.2004)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data: RM/2004/A000291 16 June 2004 (16.06.2004) IT (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIP (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,
- (71) Applicant (for all designated States except US): FIN-MECCANICA S.p.A. [IT/IT]; Piazza Monte Grappa, 4, 1-00195 Roma (IT).

[Continued on next page]

(54) Title: BEAM SEPARATION APPARATUS FOR MONOSTATIC LIDARS



(57) Abstract: Monostatic LIDARs use the same telescope to send the laser beam in atmosphere and to collect the backscattered echo. An important element of monostatic LIDARs is the optical separator between the emission and reception paths of the laser beam. By using a system made by a Faraday rotator in combination with two polarizing beam splitters suitable oriented, it is possible to achieve this separation with minimum losses with respect o prior systems using semi-reflective plates and/or polarizing beam splitters in conjunction with quarter-wave plates. The effectiveness of this system does not rely on the maintenance of the polarization status of the laser beam when backscattered by the atmospheric molecules and particles, neither on the reduction of the received laser power relatively to the transmitted one. The system is simple, compact, and can work at several wavelengths of the laser source.

WO 2005/124393 A1



FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE,
SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,
GW, ML, MR, NE, SN, TD, TG).

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

Published:

— *with international search report*